

Report on WDM experiments and theory discussion group – F. Bieniosek & R More co-chairs

- General themes for discussion: droplet physics, Thomson scattering, laser diagnostics, EOS, ways to improve preliminary ideas for EOS assessment – add a tamper (cryo H₂ layer or CH)?
- Kirsten Fagnan (LBNL) – status of ALE-AMR model (Surface tension)
- Phil Heiman (LBNL/LCLS) – described time-resolved x-ray spectroscopy of WDM at ALS
- Andrea Kritcher (LLNL) – x-ray scattering diagnostics of laser-driven target implosions , 350J
- Frank Nuernberg (TU Darmstadt) – laser driven ion beams at Vulcan (Rutherford Lab) petawatt laser – produce proton beam in Ti foil, to form liquid carbon
- Andrew Forsman (GA) – proposed collaborative experiment that supports target foil on thin metal strip with tapered holes to control target expansion and produce one-D foil expansion that can easily be probed.

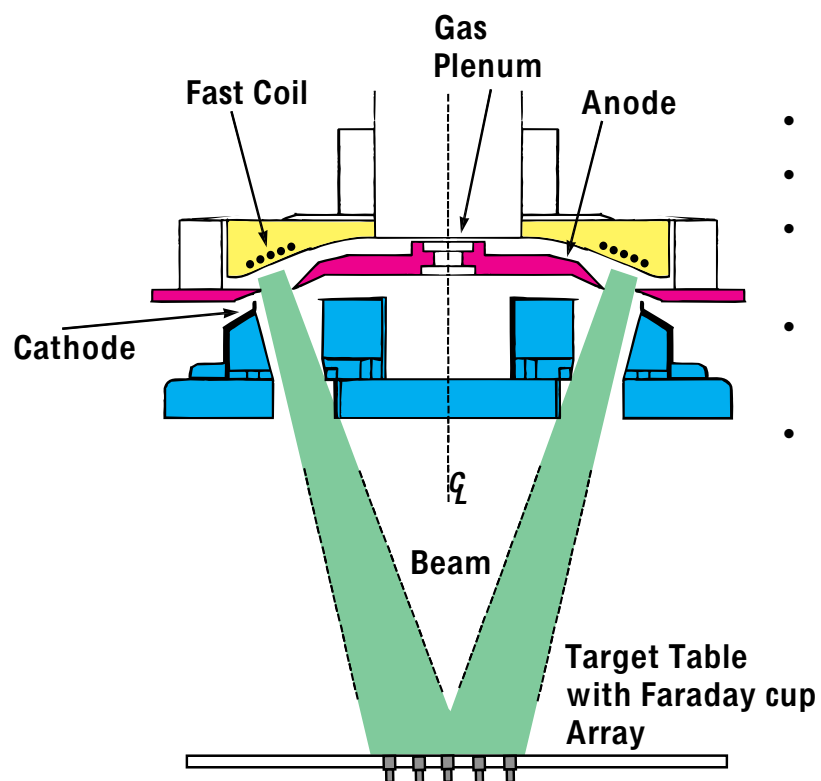


Report on WDM experiments and theory discussion group, cont.

- Dieter Hoffmann (TU Darmstadt) – presented details of recent GSI measurements – pyrometer data, contactless electrical conductivity measurements (using GHz RF induction signal), possible collaboration on polarization effects?
- Tim Renk (SNLA) – experiments on RHEPP-1: 500-700 kV 250 A/cm² H, He, N₂, O₂, Ne, Ar, ... IFE/MFE first wall issues – 1600 pulses simulate ELM damage to first wall; discussion of possible collaboration (droplets, transient darkening?) to take advantage of unique capabilities of the RHEPP (proton beam range = 10 micron in SiO₂)
- Paul Drake (U. Michigan) – where is WDM in the universe? Planet interiors, collisions, e.g.: Dynamos making magnetic field in Jupiter, Dust grains in space, Saturn's temperature
- Michael Desjarlais (SNLA) - AC conductivity issues, comments on the various experiments.



Schematic view of RHEPP-1 diode region showing MAP (Magnetically Confined Anode Plasma) Ion Source



- 500-700 kV
- 250 A/cm²
- Beams from H, He, N₂, O₂, Ne, Ar, Xe, Kr, CH₄
- Overall treatment area ~ 150 cm²
- Diode vacuum ~ 10⁻⁵ Torr



SEMS of Tungsten M182 perp after 1600 pulses: Little topology change below 1 J/cm², some roughening w/ pulse number at ~ 1-1.5 J/cm²

Top Row: about 0.6-0.9 J/cm²
Ra ~ 0.2 μm max

1,000X MAG
All images

From J. Linke, FZ Julich

